**UNIT 2 Macroeconomics**

**SAMPLE PLAN**

### Week 1

**Day 1**
- (A) Introduce macroeconomics using Visuals 2.1 and 2.2.
- (B) Have the students complete Activity 9.
- (C) Discuss answers to Activity 9.
- (D) Use Visual 2.3 to discuss circular flow.
- (E) Have the students complete Activity 10.
- (F) Review Activity 10.

**Day 2**
- (A) Use Visual 2.4 to discuss economic goals.
- (B) Lecture on measuring key macroeconomic variables.
- (C) Have the students complete Activity 11.
- (D) Review Activity 11.
- (E) Have the students complete Activity 12 for homework.

**Day 3**
- (A) Review Activity 12.
- (B) Lecture on price indexes and inflation.
- (C) Have the students complete Activity 13 in class.
- (D) Review Activity 13.

**Day 4**
- (A) Play the Inflation Game (Activity 14).
- (B) Have the students complete Activity 15 for homework.

**Day 5**
- (A) Review Activity 15.
- (B) Lecture on unemployment using Visuals 2.5 and 2.6.
- (C) Have the students complete Activity 16 in class.
- (D) Review Activity 16.

### Week 2

**Day 6**
- (A) Lecture on business cycles, using Visual 2.7.
- (B) Have the students complete Activity 17 in class and discuss answers.

**Day 7**
- (A) Have the students complete Activity 18 as initial step in review for unit test.
- (B) Review Activity 18.

**Day 8**
- Give unit test.
Introduction and Description
This lesson defines macroeconomics, presents the important macroeconomic questions and explains the different sectors of a macroeconomic model of the economy. The circular flow model shows the household sector, the business sector and the government sector with the basic interactions among the sectors.

Activity 9 asks the students to think about current economic issues, the ideas frequently expressed and the economic basis for each of these ideas. The activity draws on their understanding of a few basic economic concepts. Activity 10 has the students use the circular flow concepts to gain understanding about the movement of money and goods and services in the economy.

Objectives
1. Define macroeconomics.
2. Explain the important macroeconomic issues.
3. Describe the circular flow of goods, services and payments in the macroeconomy.
4. Describe the major sectors of the macroeconomy.

Time Required
One class period or 45 minutes

Materials
1. Activities 9 and 10
2. Visuals 2.1, 2.2 and 2.3

Procedure
1. Project Visual 2.1 and discuss the importance of each question. Here are some ideas for each question on the transparency.

Why does output fluctuate?
Use Visual 2.2, a graph of real gross domestic product from 1952 to 2001, to show how output has fluctuated. As output rises and falls, the amount of goods and services people have increases and decreases. Thus, the standard of living rises and falls, and people are better off or worse off. The changes in output cause changes in the number of people employed. Macroeconomics looks at the determinants of output fluctuation and how these factors can be controlled.

What determines economic growth?
Just as fluctuations in output affect the standard of living from year to year, the long-run growth in output is important for society’s welfare. Growth in an economy depends on the number of workers, the education and training of workers, the technological advances, the amount of machinery and technology labor has to work with, and the basic material resources. Macroeconomics addresses how society can encourage the development of these factors, which determine economic growth.

Why do we have unemployment, and why is unemployment a problem?
The unemployed are people who are actively seeking jobs or are temporarily laid off. The question usually arises, “Why won’t these people work for a lower wage and thus get a job?” Some unemployed people do not have the skills firms require and are unable to find a job even at a lower wage. Some unemployed people do have skills and want to be paid the market wage for these skills, and they are willing to continue to search for a job until they find one. Some of these people are unemployed because firms do not have the need for additional workers because demand for their product is down. Firms will typically not fire existing workers to hire new workers at a lower wage because doing so endangers worker loyalty and also increases the firm’s
training costs. Unemployment is not simply a problem for the unemployed. Unemployment means that society has fewer products because these workers are not working. Unemployment also imposes social and psychological costs on society.

■ Why do we have inflation, and why is inflation a problem?

Inflation is an increase in the average price level over time. One of the difficulties with inflation is its unpredictability. If people knew what inflation was going to be, they could build in adjustments for its effects. Macroeconomics studies the causes of inflation, the misallocation of resources that result from inflation and methods for controlling inflation.

■ Which government policy affects output, growth, unemployment and inflation?

Fiscal policy is a summary of the government’s decisions about expenditures and taxation. Government decisions about taxes and about how much it will spend affect the level of output, growth, unemployment and inflation.

■ How do changes in the amount of money in the economy affect output, growth, unemployment and inflation?

The decisions of the central bank — the Federal Reserve in the United States — determine the amount of money in the economy. The amount of money in the system determines to a great extent the level of economic activity. The amount of money in the economy (money supply) in conjunction with how much money society wants to use determine the interest rate. Monetary policy is a summary of the Federal Reserve’s decisions about money and interest rates.

■ How do domestic economic activities affect other countries and our trade?

A nation’s economy does not operate independent of other countries’ economies. Trade policies, monetary policies, and fiscal policies all affect the impact of the domestic economy on the economies of other nations. In the next lesson the economic basis for trade is explained.

2. Now have the students work on Activity 9 either as a quiz or as a worksheet. Discuss the answers to Activity 9. This will help the students start to learn the definitions of the macroeconomic terms they have heard on television or read in the print media.

3. Project Visual 2.3. Discuss the flows of goods and services and the reverse flow of payments. Be sure the students understand that the three sectors of the economy are households (resource owners), businesses and government.

4. Have the students complete Activity 10 and discuss the answers.
Test of Macroeconomic Thinking

All the answers are false. The reasoning for each false statement follows.

1. Scarcity is a relative concept. As our resources and output increase, so do our wants for goods and services.

2. Given the limited resources and unlimited wants of people, we would find new ways to use our resources if the world disarmed. Military expenditures are made for defense reasons, not for economic reasons.

3. Money is not a resource. If money were a resource, the country would be better off if we made more money. If the country prints more money, the result will be inflation. Money is a tool that serves as a medium of exchange, a store of value and a standard of value.

4. GDP is a measure of economic activity. The level of GDP does not measure economic welfare or the distribution of the goods and services among the people.

5. At full employment, unemployment is not zero. Frictional unemployment (people moving from one job to another) and structural unemployment (people having skills — repairing typewriters, for example — that are no longer in demand) are always present in the economy. At full employment, cyclical unemployment is zero. Cyclical unemployment results from changes in the business cycle.

6. Inflation was below 3 percent for several periods during the 1950s, 1990s and 2000s.

7. Debtors are helped by unanticipated inflation because the value of the money with which they repay their debt is less than the value of the money they borrowed. Conversely, savers and people on fixed incomes are hurt by unanticipated inflation because they can no longer purchase the same amount of goods and services.

8. Most of the money supply consists of demand deposits (checking accounts) and is created by banks through lending.

9. Gold has not been used to determine the international value of the U.S. dollar since 1971. The value of money is determined by what it can buy.

10. Economists think that government taxing and spending decisions (fiscal policy) affect the health of the economy. Further, some taxation is imposed to curb particular expenditures — for example, cigarette taxes.

11. The Federal Reserve System controls the money supply and affects the economy by changes in the money supply. It also provides services to financial institutions, such as check clearing and loans. The Federal Deposit Insurance Corporation insures deposits of most financial institutions.

12. Tariffs may save jobs in a specific industry. In general, tariffs raise the price of goods for consumers and interfere in the efficient allocation of resources, thus hurting the economy as a whole. Furthermore, because of the higher prices, employees in other industries may lose their jobs.
Understanding the Circular Flow of the Macroeconomy

Part A
Each of the flows in the circular flow diagram in Figure 10.1 is numbered. Identify which number matches the transaction described in the statements below. Consider only the first transaction — not the return flow.

1. David buys a CD at the local store for $9.99.  _______4______
2. Emily earns $6.50 per hour entering data at the music conservatory.  _______1______
3. Maria pays her federal income tax.  _______5______
4. Jagdish receives $15,000 in profits from his half-ownership of a coffee shop.  _______1______
5. Keisha makes decorative pillows that she sells for $30.00.  _______3______
6. Mammoth Toys Inc. hires 100 new employees.  _______2______
7. The National Park Service opens two new campgrounds in Yellowstone National Park.  _______6______

Part B
Write T if the statement is true and F if the statement is false.

8. Money flows are clockwise.  _______T______
9. Goods and services flows are clockwise.  _______F______
10. The resource market determines the price per acre of farmland.  _______T______
11. The product market determines the price of a computer.  _______T______
12. Firms sell resources in the resource markets.  _______F______
13. Government buys resources and households sell resources.  _______T______
14. Government buys products, and firms sell products.  _______T______
15. The product market determines the salary of the C.E.O. of a firm.  _______F______
16. The resource market determines the price of soda.  _______F______
17. The resource market determines the price of soda-bottling equipment.  _______T______
Introduction and Description
The goals of U.S. macroeconomic policy makers are captured in two laws: the Employment Act of 1946 and the Full Employment and Balanced Growth Act of 1978 (Humphrey-Hawkins Act). The 1946 law committed the federal government to maximize employment and economic growth, and maintain a stable price level. The 1978 law went further and committed the government to reach an unemployment rate of 4 percent, to stabilize the price level with a target inflation rate of zero percent and to maintain steady economic growth. In this lesson the students should learn the components of gross domestic product and how we measure the economy to see if we are meeting macroeconomic policy goals. This lesson continues an emphasis on definitions and describes the limitations of the measures of macroeconomic activity.

In Activity 11, the students practice calculating the unemployment rate, the labor force participation rate, a price index and the short-run change in output. Activity 12 helps the students determine what is included in gross domestic product (GDP) and what is included in government spending, household spending and business spending. It also asks them to explain the basic reasoning for inclusion or exclusion of economic activity in GDP.

Objectives
1. Describe the economic goals of U.S. society.
2. Define full employment, inflation and economic growth.
3. Explain the methods of measuring macroeconomic goals.
4. Describe the construction of a price index.
5. Explain the difference between real GDP and nominal GDP.
6. Explain the importance of GDP as a measure of economic activity.

Time Required
One class period or 45 minutes

Materials
1. Activities 11 and 12
2. Visual 2.4

Procedure
1. Project Visual 2.4. Discuss each goal and why it is important. Discuss the variables used to evaluate the performance of the U.S. economy at different times. In general, the goals conflict, and society is faced with trade-offs among the goals. If the students understand the goals and validity of the measurement of economic variables, it will help them understand the implications of the trade-offs among goals.

2. Have the students read the Activity 11 overview and discuss macroeconomic policy goals. Stress that the unemployment rate is a broad measure of economic activity. However, if policy makers are going to create and implement programs to help the unemployed, they need to know more about the unemployed: skill level, ethnic and racial groups, and age groups. Have the students complete Part A and review the answers.

3. Have the students complete Activity 11 and review the answers. Here are the critical issues:
   (A) The CPI measures the price level; and from this, the inflation rate can be calculated.
   (B) The CPI is only one of several price level measures.
   (C) There is discussion about how well the CPI measures the inflation that most people experience. The CPI includes items that people don’t buy every year: house, car, etc. Thus, the CPI may overstate the actual change in the cost of living.
(D) The growth rate in real GDP is a better measure of the change in the macroeconomic conditions than the growth rate of nominal GDP because nominal GDP includes the effects of inflation. The growth rate in real GDP per capita captures a measure of changes in the standard of living.

4. The students should understand the difference between fluctuations in output (short-run economic growth) and long-run economic growth. Fluctuations in output are measured by the changes in real gross domestic product from quarter to quarter or year to year. In general, fluctuations in output are caused by greater or lesser utilization of the existing capital stock and technology. So we are actually measuring changes in real output because of more or less labor applied to the existing level of technology and plant and equipment. Long-run economic growth refers to changes in the productive capability of the economy through changes in the amount of plant and equipment and technology.

Economists use the term economic growth to refer to long-run economic growth and fluctuations in real output to refer to the short-run phenomenon. However, the media frequently refer to short-run changes in output as economic growth. The Advanced Placement Examination uses the term economic growth to refer to the long-run changes in the economy’s ability to produce.

5. Have the students read in their text about GDP and national income accounting, then complete Activity 12 for homework.

6. Review Activity 12 to ensure the students understand that only final goods and services are included in GDP, that only market activities are included and that financial transactions are not included. The students must understand the identity GDP = C + I + G + NX and what types of expenditures are included in each component. This is the point of Part B of Activity 12.

7. Review the answers to Activity 12 with the students.
Measuring Broad Economic Goals

Part A
Measuring Employment

The unemployment rate (UR) is defined as:

\[ UR = \frac{\text{number of unemployed}}{\text{labour force}} \times 100 \]

The labor force participation rate (LFPR) is defined as:

\[ LFPR = \frac{\text{number in labor force}}{\text{adult population}} \times 100 \]

How well has the U.S. economy met the goal of full employment? Use the formulas just given to fill in the last three columns of Figure 11.1. All of the population and labor-force data are in millions.

Figure 11.1
Civilian Employment 1960 to 2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Civilian Noninstitutional Population Aged 16 and Over</th>
<th>Civilian Labor Force</th>
<th>Unemployment Rate</th>
<th>Labor Force Participation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Employed</td>
<td>Unemployed</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>1960</td>
<td>117</td>
<td>66</td>
<td>4</td>
<td>70 5.7%</td>
</tr>
<tr>
<td>1970</td>
<td>137</td>
<td>79</td>
<td>4</td>
<td>83 4.8%</td>
</tr>
<tr>
<td>1980</td>
<td>168</td>
<td>99</td>
<td>8</td>
<td>107 7.5%</td>
</tr>
<tr>
<td>1990</td>
<td>188</td>
<td>117</td>
<td>7</td>
<td>124 5.6%</td>
</tr>
<tr>
<td>2000</td>
<td>209</td>
<td>135</td>
<td>6</td>
<td>141 4.3%</td>
</tr>
</tbody>
</table>

1. In which year was the economy very close to full employment as indicated in the Humphrey-Hawkins Act? **2000. The unemployment rate was the lowest in that year.**

2. Why has the labor force participation rate increased since the 1960s? **More women and retirees have entered or re-entered the labor force.**

3. Do the data on the national unemployment rate in Figure 11.1 reflect the extent of unemployment among a particular group in our society, such as teenagers aged 16 to 19? Explain. **No, the data are too aggregated. The data do not provide information for different demographic groups.**
Part B
Measuring Price Changes

Price change = \( \frac{\text{change in CPI}}{\text{beginning CPI}} \) \times 100

Here’s the calculation for the example above:

\[
\text{Price change} = \frac{165 - 150}{150} \times 100 = 10\%
\]

Fill in the blanks in Figure 11.2, and then use the data to answer the questions.

Figure 11.2
Prices of Three Goods Compared with Base-Year Price

<table>
<thead>
<tr>
<th>Goods</th>
<th>Quantity Bought in Base Year</th>
<th>Unit Price in Base Year</th>
<th>Spending in Base Year</th>
<th>Unit Price in Year 1</th>
<th>Spending in Year 1</th>
<th>Unit Price in Year 2</th>
<th>Spending in Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole pizza</td>
<td>30</td>
<td>$5.00</td>
<td>$150</td>
<td>$7.00</td>
<td>$210</td>
<td>$9.00</td>
<td>$270</td>
</tr>
<tr>
<td>Prerecorded audio cassette</td>
<td>40</td>
<td>6.00</td>
<td>$240</td>
<td>5.00</td>
<td>$200</td>
<td>4.00</td>
<td>$160</td>
</tr>
<tr>
<td>Six-pack of soda</td>
<td>60</td>
<td>1.50</td>
<td>$90</td>
<td>2.00</td>
<td>$120</td>
<td>2.50</td>
<td>$150</td>
</tr>
<tr>
<td>Total</td>
<td>—</td>
<td>—</td>
<td>$480</td>
<td>—</td>
<td>$530</td>
<td>—</td>
<td>$580</td>
</tr>
</tbody>
</table>

4. What is the total cost of buying all the items in Year 2? \( \text{Total} \ = \ $580 \)

5. What is the CPI for Year 2? \( 120.8 \) \( \left( \frac{580}{480} \right) \times 100 \)

6. What is the percentage increase in prices from the base year to Year 2? \( 20.8\% \)

7. In August 2000 the CPI was 172.8, and in August 2001 the CPI was 177.50. What was the percentage change in prices for this 12-month period? \( 2.7\% \)
**Part C**

**Measuring Short-Run Economic Growth**

**Figure 11.3**

**Nominal and Real GDP**

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal GDP</th>
<th>Price Index</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 3</td>
<td>$5,000</td>
<td>125</td>
<td>11</td>
</tr>
<tr>
<td>Year 4</td>
<td>$6,600</td>
<td>150</td>
<td>12</td>
</tr>
</tbody>
</table>

8. What is the real GDP in Year 3? $4,000 $[(100 \times $5,000) / 125]$

9. What is the real GDP in Year 4? $4,400 $[(100 \times $6,600) / 150]$

10. What is the real GDP per capita in Year 3? $364 \frac{(4,000)}{11}$

11. What is the real GDP per capita in Year 4? $367 \frac{(4,400)}{12}$

12. What is the rate of real output growth between Years 3 and 4? $10\% \left[ \frac{(4,400 - 4,000)}{4,000} \right] \times 100$

13. What is the rate of real output growth per capita between Years 3 and 4? (Hint: Use per-capita data in the output growth rate formula.) $0.82\% \left[ \frac{(367 - 364)}{364} \right] \times 100$
All About GDP

Part A
Is This Counted as Part of GDP?
Which of the following are included and which are excluded in calculating GDP? Explain your decisions.

1. A monthly check received by an economics student who has been granted a government scholarship
   Excluded: transfer payment from government to an individual

2. A farmer’s purchase of a new tractor Included: business fixed investment

3. A plumber’s purchase of a two-year-old used truck Excluded: Truck was not produced in current year.

4. Cashing a U.S. government bond Excluded: Bond is a financial asset.

5. The services of a mechanic in fixing the radiator on his own car Excluded: This is a nonmarket activity.

6. A Social Security check from the government to a retired store clerk Excluded: transfer payment from government to an individual

7. An increase in business inventories Included: Inventory is an investment.

8. The government’s purchase of a new submarine for the Navy Included: government purchase of a good

9. A barber’s income from cutting hair Included: income from services provided

10. Income received from the sale of Nike stock Excluded: Stock is a financial asset.
Part B
GDP: Is It Counted and Where?
For each of the following items, write one of the following in the space provided:

C if the item is counted as consumption spending.
I if the item is counted as investment spending.
G if the item is counted as government spending.
NX if the item is counted as net exports.
NC if the item is not counted in GDP.

C 11. You spend $7.00 to attend a movie.
I 12. A family pays a contractor $100,000 for a house he built for them this year.
NC 13. A family pays $75,000 for a house built three years ago.
C 14. An accountant pays a tailor $175 to sew a suit for her.
G 15. The government increases its defense expenditures by $1,000,000,000.
NC 16. The government makes a $300 Social Security payment to a retired person.
NC 17. You buy General Motors Corp. stock for $1,000 in the stock market.
I 18. At the end of a year, a flour-milling firm finds that its inventories of grain and flour are $10,000 above the amounts of its inventories at the beginning of the year.
NC 19. A homemaker works hard caring for her spouse and two children.
C 21. You pay $300 a month to rent an apartment.
NC 23. R.J. Reynolds Co. buys control of Nabisco.
NX 24. You buy a new Toyota that was made in Japan.
C 25. You pay tuition to attend college.
Part C
Why Are Items Counted or Not Counted in GDP?

26. We count only the final retail price of a new good or service in GDP. Why? To avoid double counting.

27. A purely financial transaction will not be counted in GDP. Why? A financial transaction does not involve production of a good or service. It is a transfer of assets.

28. When a homeowner does home-improvement work, the value of the labor is not counted in GDP. Why? The labor does not involve a market transaction, and it is difficult to compute the value.
Price Indexes and Inflation

Introduction and Description
At various points in the economic history of the United States, inflation has been a major economic problem. The high inflation rates of the late 1960s and 1970s led to the severe recession of the early 1980s. This experience has had a major impact on our economic policy today. Monetary policy under Alan Greenspan's chairmanship of the Federal Reserve System has revolved around controlling inflation. In this lesson, the measurement of prices is reviewed and the impact of unanticipated inflation is explored.

Activity 13 provides practice in creating a price index, changing the base year of a price index and examining the results of changing the base year. Activity 14 is a classroom game to help the students understand the effects of inflation on individuals. The students use their knowledge of the effects of unanticipated inflation to evaluate different scenarios, and they explain their analysis in Activity 15.

Objectives
1. Demonstrate how to change the base year of a price index.
2. Define anticipated versus unanticipated inflation.
3. Explain the impact of unanticipated inflation.

Time Required
Two class periods or 90 minutes

Materials
1. Activities 13, 14 and 15
2. Inflation Game cards

Procedure
1. Review the construction of a price index. Point out the current base year used in the government's reporting of macroeconomic statistics. You can find this information in the Economic Report of the President, the Federal Reserve Bulletin or in several places on the Internet.
2. Have the students complete Activity 13 in class. Review the answers with the students.
3. Discuss the difference between anticipated inflation and unanticipated inflation. Anticipated inflation represents the level of inflation people expect to occur and have built into their economic decisions. Unanticipated inflation is the level of inflation that is not expected or is unforeseen.
4. Wage contracts and long-term loan contracts are usually the source for judging the expected inflation rate. Unanticipated inflation causes economic costs because people have not adjusted earnings and expenditures for this level of inflation. High levels of anticipated inflation also have economic costs. One economic cost of anticipated high inflation is transactions costs referred to as boot-leather costs because people run around trying to avoid losses from the declining value of money. A second economic cost is the distortion of incentives generated by the tax system. For example, anticipated inflation increases the dollar return on investments. As these dollar returns are taxed, the effective tax rate rises. The third economic cost is the result of the uncertainty of how and when policy makers will respond to the high level of inflation.
5. Play the Inflation Game: Royalty for a Day (Activity 14). This is a role-play. The instructions are on the activity Answer Key. You will need to prepare ahead of time cards for each speaker and scorecards for the audience if the students do not have their own books.
6. Have the students complete Activity 15 for homework. Review the answers with the students.
Price Indexes

There is more than one method for constructing a price index. The easiest to understand is probably the weighted-average method explained in this activity. This method compares the total cost of a fixed market basket of goods in different years. The total cost is weighted by multiplying the price of each item in the basket by the number of units of the item in the basket and then adding up all the prices. The cost of the basic market basket in the current year is then expressed as a percentage of the cost of the basic market basket in the base year using this formula:

\[
\text{index number} = \frac{\text{current-year cost}}{\text{base-year cost}} \times 100
\]

Multiplying by 100 converts the number so it is comparable to the base-year number. The base year always has an index number of 100 since the current-year cost and the base-year cost of the market basket are the same in the base year.

**Part A**

**Constructing a Price Index**

Using this information, let us now construct a price index. Fill in the blanks in Figure 13.1.

**Figure 13.1**

**Constructing a Price Index**

<table>
<thead>
<tr>
<th>Basic Market Basket Item</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price Per Unit</td>
<td>Cost of Market Basket</td>
<td>Price Per Unit</td>
</tr>
<tr>
<td>Cheese</td>
<td>$1.75</td>
<td>$3.50</td>
<td>$1.50</td>
</tr>
<tr>
<td>Blue Jeans</td>
<td>12.00</td>
<td>24.00</td>
<td>15.50</td>
</tr>
<tr>
<td>Gasoline</td>
<td>1.25</td>
<td>12.50</td>
<td>1.60</td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>—</td>
<td>$40.00</td>
<td>—</td>
</tr>
</tbody>
</table>

1. We now have the information needed to construct a price index. The first step is to pick a base year and apply the formula. If Year 1 is selected as the base year, the index number for Year 1 is \(\frac{$40}{$40} \times 100 = 100\). The index number for Year 2 is \(\frac{$50}{$40} \times 100 = 125\) and the index number for Year 3 is \(\frac{$70}{$40} \times 100 = 175\).

2. These index numbers indicate that there was a 25 percent increase in prices between Year 1 and Year 2.
   (A) What is the percentage increase between Year 1 and Year 3? \(75\%\)
   (B) What is the percentage increase between Year 2 and Year 3? \(40\% \left(\frac{175 - 125}{125}\right)\)
Part B
Changing the Base Year

We need not have chosen Year 1 to be our base year. To determine if our choice of base year influenced the results, let’s use Year 2 as our base year and recompute both the index numbers and the percentage changes between years. The first percentage change in prices has been done for you.

Figure 13.2
Changing the Base Year of a Price Index

<table>
<thead>
<tr>
<th>Year (Year 2 = Base)</th>
<th>Index Numbers</th>
<th>Percentage Change in Prices (calculated by using changes in index numbers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>($40 / $50) x 100 = 80</td>
<td>Between Yr. 1 and Yr. 2: ([(100 – 80) / 80] x 100 = 25%)</td>
</tr>
<tr>
<td>Year 2</td>
<td>($50 / $50) x 100 = 100</td>
<td>Between Yr. 2 and Yr. 3: ([(140 – 100) / 100] x 100 = 40%)</td>
</tr>
<tr>
<td>Year 3</td>
<td>($70 / $50) x 100 = 140</td>
<td>Between Yr. 1 and Yr. 3: ([(140 – 80) / 80] x 100 = 75%)</td>
</tr>
</tbody>
</table>

3. Do the index numbers change when the base year is changed from Year 1 to Year 2? **Yes**

4. Does the percentage change in prices between years change when the base year is changed from Year 1 to Year 2? **No**. Why or why not?

   Only the base is changed. The relative price changes are the same.

5. Would the price index numbers you have computed above change if a different set of expenditure patterns were selected for weighting? **Yes**. Why?

   The index numbers depend on the weights and the price changes.

6. Under what conditions would each price index number computed above be a cost-of-living index?

   To be a cost-of-living index, the number would have to include all major expenditure items consumers purchase. The quantity of the items purchased could not have changed over time, and the quality of the items could not have changed.

7. Would each price index number computed above be accurate if the quality of the goods in the basic market basket changed? **No**. Explain why.

   Because the true weights would be different.

8. How do you know if the quality of a product changes for the better? For the worse?

   The product quality will have improved if the product yields more utility or satisfaction. The product will yield less satisfaction if the quality has deteriorated.
Inflation Game: Royalty for a Day

Introduction
Prices usually rise over a period of time. The same items you bought a few years ago may cost more now. For example, a restaurant menu lists its finest steak entrée at $22; however, two years ago the same steak was only $20. Inflation is the term used to describe an increase in the overall level of prices. It's an important concept to understand because it's discussed so frequently in the media: Price indexes and inflation measurements are reported almost daily in the financial pages, politicians constantly announce programs to control inflation and economists endlessly debate inflation's effects on economic growth.

In general, people don't like inflation because higher prices mean they can purchase less for the same income. However, inflation does not affect everyone in the same way. While many people are hurt by inflation, especially when it is unexpected, others may actually benefit.

This activity is designed to teach the students the effects of inflation on different segments of the population: Who is hurt by unanticipated inflation and who benefits?

Time Required
One class period

Overview of the Game
This activity is modeled after an ancient (1950s) television game show called “Queen for a Day,” in which (women) contestants took turns describing their lives of tragedy, hardship and sorrow. After all had shared their misery, the sympathetic audience voted for the most deserving by applauding. An “applause meter” measured the sound. The winner was crowned “Queen for a Day” and presented with a robe, crown and many prizes. In this modern version, male and female economics students compete for the honor of “Royalty for a Day” by convincing the audience how much they are suffering because of inflation.

Materials
1. 12 individual contestant sheets describing the role of the contestant. These are set up as cards at the end of this activity.
2. Audience scorecards
3. Crown and robe for winning contestant (or other symbols of royalty)

Procedure
1. Arrange the classroom so the front of the room is the stage and the audience sits facing the stage.
2. Begin the activity by reviewing the concept of inflation and explaining the game’s purpose using the Introduction and Overview.
3. The teacher performs the role of host, announcer and applause meter.
4. Select 12 students to be contestants and hand out role cards. Ask each student to study the role he or she is asked to play. The students may improvise as long as they communicate the basic message. The “contestants” will be called individually to “perform” their role in front of the audience. They will each have approximately 60 seconds to perform.
5. The remainder of the class participates as the audience. Hand each student an audience scorecard. (Audience scorecards are in Part A of the student book.) They are to complete the scorecard as each contestant performs. Tell the students to assume the inflation rate is 5 percent. Note that this is key to understanding the gain or hurt perspective of some contestants.

6. Begin the game. Call the contestants to the stage to perform one at a time. Allow approximately 60 seconds for each. Make sure the students in the audience have sufficient time between contestants to mark their scorecards.

7. At the end of all the contestants’ performances, present a brief reminder of the purpose of the game and recap each of the 12 contestants by asking questions such as “Who has been most hurt by inflation?” “Who will be crowned ‘Royalty for a Day?’ Will it be Priscilla the homeowner or Mr. Mayor or Peter the storeowner? Or possibly it will be Theresa the union member at the auto factory or Jerry the real-estate speculator?” Then ask the students in the audience to review their scorecards individually and select the candidate they feel is most hurt by inflation.

8. Then read each contestant’s name. Ask the students in the audience to rate each contestant with applause. The audience must applaud each contestant, but the louder the clapping, the greater the rating. Suggestion for increased frivolity: Act as a human applause meter by placing your hands together above your head. Start in a sideways bent position (9:00) and gradually point straight up as applause increases (12:00). For truly thunderous applause, continue bending to the 3:00 position.

9. The contestant with the greatest rating (loudest clapping) is crowned, robed and proclaimed “Royalty for a Day.”

10. Conduct Part B. Do not get hung up on the exact position of each person. Instead, emphasize the reasoning behind why the students position the people as they do.

11. Conduct a post-game discussion:
   (A) Using a blank audience scorecard on an overhead projector or on the board, have the students volunteer their answers about how inflation affected each contestant.
   (B) “Inflation reduces the value of money.” Have the students use the contestants as a basis for discussion. (Lucy, Elmer)
   (C) “When people’s incomes increase more slowly than the inflation rate, their purchasing power declines.” Have the students use the contestants as a basis for discussion. (Mr. Sad Class)
   (D) Discuss how the costs of inflation are different for different groups of people. “Unexpected inflation hurts savers and people on fixed incomes; it helps people who have borrowed money at a fixed rate of interest.”
   (E) Discuss how inflation imposes costs on people beyond its effects on wealth distribution because people devote resources to protect themselves from expected inflation. Have the students use the contestants as a basis for discussion. (cost-of-living allowances or COLAs, long-term contracts, fixed interest rates)
   (F) Give a brief explanation about measuring inflation. “The consumer price index (CPI) is the most commonly used measure of price-level changes. It can be used to compare the price level in one year with price levels in earlier or later years.”
   (G) Give a brief explanation to the class about how “expectations of inflation may lead to higher interest rates.”
### Part A
#### Audience Scorecard

<table>
<thead>
<tr>
<th>Contestant</th>
<th>Gain or Hurt by Inflation?</th>
<th>Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priscilla Homeowner / Worker</td>
<td>Gain</td>
<td>Wages increase above inflation rate. Could cause cost-push inflation</td>
</tr>
<tr>
<td>Mayor Government official</td>
<td>Gain</td>
<td>Higher tax receipts and able to repay debt / loan with lower purchasing-power dollars</td>
</tr>
<tr>
<td>Peter Store owner</td>
<td>Hurt</td>
<td>Costs are rising faster than revenue.</td>
</tr>
<tr>
<td>Theresa Auto worker / Union member</td>
<td>Gain</td>
<td>COLA keeps wages equal to inflation; pay raise results in wages above inflation rate. Cost-push inflation possible</td>
</tr>
<tr>
<td>Jerry Real-estate developer / Speculator</td>
<td>Gain</td>
<td>Money borrowed is repaid with dollars that have less purchasing power.</td>
</tr>
<tr>
<td>Elmer Retiree</td>
<td>Hurt</td>
<td>People on fixed income find the purchasing power of savings decreases.</td>
</tr>
<tr>
<td>Mr. Sad Class Teacher</td>
<td>Hurt</td>
<td>Wages are not keeping up with inflation.</td>
</tr>
<tr>
<td>Lucy High school senior</td>
<td>Hurt</td>
<td>Saved dollars have less purchasing power.</td>
</tr>
<tr>
<td>Bernie Bank president</td>
<td>Hurt</td>
<td>Bank loans are paid back with inflated dollars, which buy less.</td>
</tr>
<tr>
<td>Helga Retiree</td>
<td>Hurt</td>
<td>Saved dollars have less purchasing power.</td>
</tr>
<tr>
<td>Jerome Potential homeowner / Borrower</td>
<td>Uncertain, depends on future price-level changes</td>
<td>Will gain if real interest rate falls. Will be hurt if real interest rate rises.</td>
</tr>
<tr>
<td>Lawrence British businessowner</td>
<td>Gain</td>
<td>Signed contract that locked in lower price for an extended period of time.</td>
</tr>
</tbody>
</table>
Part B
Spectrum Technique for Analyzing Contestants
Distribute the contestants along the spectrum, and explain why you think each should be located where you put him or her.

Figure 14.1
Spectrum Technique for Analyzing Contestants

Helga
Elmer

Lucy
Mr. Class

Bernie
Peter
Jerome

Priscilla
Theresa

Mayor
Lawrence

Suffers most from inflation
Neutral (neither suffers nor benefits)
Benefits most from inflation
Priscilla
Homeowner / Worker
I’m Priscilla, a homeowner. I used to think that this inflation stuff was just a bunch of media hype. All the stuff I have to buy to keep my house going is costing me more each year. Now my income is buying fewer goods and services than it used to. Let me give you an example. My lawnmower broke, and I had to buy a new one last week. The new one is just like the old one, except it cost 50 percent more than the old one did 10 years ago. And here’s another thing: The state says my house is worth more because house prices in general have risen. How does that affect me? Because my house is worth more, my property taxes have gone up. Now I must pay more in taxes to live in the same house. That’s not fair — I feel like I’m living in the poor house. But I got lucky at work. I told my boss that I deserved a 6 percent raise because of all this inflation going on. You know that I couldn’t afford to live here anymore unless I got the raise. He moaned and groaned — you should have heard him — but he gave it to me. So I just went out and celebrated!

Mayor
Government official
Hello there. I’m the mayor. I know some people don’t like inflation. I’m not crazy about it — makes me look bad to the voters. You know, when prices go up, everyone seems to blame the government. And I don’t want to look bad to the voters because I need to get re-elected. But sssh. I’ll tell you a secret. Overall, higher prices for everything people buy result in higher sales-tax receipts. And this gives the city more money to spend on things the voters want, like recreation programs and road improvements. Not only this, remember that skateboard park the town built and financed with municipal bonds? Well, inflation means that we’ll pay back those bonds with cheaper dollars. So, inflation actually helps us a bit. I just hope those voters don’t blame me for the higher prices.
**Theresa**  
**Auto worker / Union member**

My name is Theresa. I’m an auto worker at the car factory. My company is high tech and has automated our production line. I have an important job because the buttons I push determine how your car interior is made. Yep, one button selects the type of seats, another button determines the color of the seat fabric and the last button plops the seat on the car frame. It’s a boring job but important because it must be done carefully. If I make a mistake, it’s very expensive for the company to correct it after the car has left the factory. I’m proud to be part of the auto-workers’ union because it really cares about its members. The union just negotiated a new five-year labor contract with a hefty raise plus an annual cost-of-living adjustment — what they call a COLA, and no, it’s not a type of soft drink. Let me tell you why I am so excited about our new contract: My wages are guaranteed to keep up with the inflation rate, no matter what it is, and I get an annual raise on top of it. I’m a great supporter of my union!

**Peter**  
**Store owner**

My name’s Peter. I run an “Everything for a Buck” store. I advertise all kinds of wonderful treasures for $1 or less. Catchy name, don’t you think? I used to do really well, but I’m not earning as much profit as I used to. Lots of folks complainin’ about inflation these days. And rightfully so; it’s a MESS. The wholesale prices I pay for merchandise keep goin’ up and up, but I gotta keep my prices at $1 because that’s my niche and why folks shop at my store. And it’s not just the merchandise that costs me more, it’s my employees, too. They threatened me with quitting if I didn’t give them a 5 percent raise. Understand employees gotta make a livin’, but so do I. Can’t run the store without employees. My costs are going up, but I can’t raise my prices — people won’t pay over a buck for my merchandise. What can I do?
Jerry
Real-estate developer / Speculator

My name is Jerry. All this moaning and groaning about inflation. Just a bunch of worry for nothing. Let me tell you how I feel about inflation: I love it! That’s right. You see, I’m a real-estate speculator. I buy houses and apartments and rent them out. I borrow as much money as I can to buy these places, so I don’t have to tie up my own money. Then, thanks to inflation, the prices rise and I raise the rents. Then after a few years, I can sell the buildings at a handsome profit. The beauty is that the rents I charge cover my costs; and when I sell, I get to keep all the profits. The banks put up the money, but I get the profits. Pretty good deal, don’t you think? And then I just start over and do it all again. I use some of my profits as down payment to borrow more money and buy more real estate. My business just keeps expanding and growing. Of course, if this inflation ever stops, I might be in a bit of a bind. But that will never happen — we always have inflation, right?

Elmer
Retiree

My name is Elmer. Don’t know how long I’m going to be able to last with this here inflation. When I was working, I put what I thought was a lot of money into a savings plan. I was self-employed, so no company pension. Thought I was being smart because my savings grew every year. Now I’m retired, and the value of my savings in terms of what it will buy is shrinking and shrinking. I’m withdrawing the same amount every month for living expenses, but it buys less and less. A few more years of inflation like this and I won’t have anything left. That’s a fine “How do you do!” Man works hard all of his life, scrimps and saves, eats all that hamburger instead of steak and look what happens. Soon I won’t be able to afford even tomato soup!
Mr. Sad Class

Teacher

I’m Mr. Sad Class, a poor starving high school teacher. My classes are boring, my students hate me and my dog just had puppies — and they just bit me, one by one, all 12 of them. On top of all that, the school district board of trustees just voted to give teachers a 2 percent raise. They thought they were generous. BIG DEAL! Inflation is 5 percent. Guess who loses? Do you really think I got a raise? I think I’ll give my students a really rotten exam.

Lucy

High school senior

I’m Lucy, a high school senior. I love all the senior activities, but they are costing me plenty. I’ve got to buy a dress for the prom and also pay for graduation announcements and the senior all-night party. My older sister told me exactly how much it cost her, so I made a budget and have been saving my money since I was a freshman. Last weekend I went looking for a prom dress. Wow! Every dress I saw would cost me more money than what my sister paid. I don’t have that much money. Well, I know from my economics class that there’s an opportunity cost associated with everything and that I have choices. I thought about the opportunity cost of not going to the prom and decided it was enormous. So I just took a counter job at the Hot Dog Haven in the mall. My manager makes me wear a yellow mustard-colored shirt, red ketchup-colored shorts and a hot-dog-shaped hat. I would die if any of my friends see me. But it’s worth it because I’m going to the prom. Also, when I took the job, I forgot that some of my wages would be deducted each month to pay taxes. It’s going to take me a little longer to get enough money for the dress.
Bernie
Bank president
I’m Bernie, the president of ABC Bank. Why the name ABC? Because ABC is listed first in the telephone directory, and everyone will see my financial institution first. Pretty clever, huh! I had to think of ways to fight those big corporate banks. My bank has a good reputation. People like to come to ABC because we give low fixed interest rate loans. Our competitors give only variable interest rate loans. Hey, just thought of something. With all this talk of inflation here, the loans ABC makes will be repaid in dollars that are worth less than the dollars originally loaned. Oh dear — we’re going to lose money!!!!

Helga
Retiree
I’m Helga. I’m 80 years old. When my dear, darlin’, wonderful, lovin’ late husband passed away — bless his soul — I thought he’d left me enough money to live for the rest of my life. But now prices are out of sight. At the grocery store they charged me 79 cents for celery, and it was a dinky bunch of celery at that! I can remember when a bunch of celery cost only 5 cents. Now, those were the good old days. But what is going to happen to me if the prices keep goin’ up? I may not be able to buy even a dinky bunch of celery. And the electric company and the phone company keep charging me more, yet I’m using less power, and hardly ever talk on the phone. What’s a person like me goin’ to do?
**Lawrence**  
**British businessowner**  
I’m Lawrence, a British businessowner. My U.K. corporation negotiated a sweet deal: a five-year contract to purchase some computers from a U.S. computer company. The chaps from the U.S. were quite genteel. They allowed us to buy computers for the next five years at the current U.S. prices as long as we promised to buy a certain quantity. This means we’ve got price protection — they’ve guaranteed us the same price for five years, even if the company raises prices next year. Now mind you, the inflation rate has remained stable in Britain these past five years. So guess what? My company gained on this contract. Can’t say I mind inflation in the U.S. I’ll drink a cup of tea to that.

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**Jerome**  
**Potential homeowner / Borrower**  
I’m Jerome, and I just went to the bank to get a loan for a new house. The loan officer told me I couldn’t get a mortgage at a fixed rate of interest. I would have to get an adjustable rate. Said something about the bank can lend money only when the interest rates can be adjusted as inflation rates change. This is a big risk for me. I can afford monthly payments of only a certain amount, and I need to know exactly how much I’m going to pay before I sign the papers. The adjustable interest rate stuff is horrible — if the bank “adjusts” my payments above my limit, I might have to default and lose my house. I’m not too sure about all this.
Who Is Hurt and Who Is Helped by Unanticipated Inflation?

In Questions 1 through 15, decide which people or groups are hurt by unanticipated inflation and which benefit from unanticipated inflation. Circle the correct response, and explain why you answered as you did.

- **H** means the person or group is hurt by unanticipated inflation.
- **G** means the person or group gains from unanticipated inflation.
- **U** means it is uncertain if the person or group is affected by unanticipated inflation or if the effects are unclear.

1. Banks extend many fixed-rate loans.
   - **H**
   - **G**
   - **U**
   
   Explain: The money the bank receives for the loan repayment will be less in real terms (purchasing power) than the loan amount.

2. A farmer buys machinery with a fixed-rate loan to be repaid over a 10-year period.
   - **H**
   - **G**
   - **U**
   
   Explain: Farmer makes payments that are less in real terms than the loan amount.

3. Your family buys a new home with an adjustable-rate mortgage.
   - **H**
   - **G**
   - **U**
   
   Explain: It depends on what happens to the future interest rate relative to the inflation rate. If the real interest rate rises, the family will be hurt.

4. Your savings from your summer job are in a savings account paying a fixed rate of interest.
   - **H**
   - **G**
   - **U**
   
   Explain: The return from savings will be worth less because of inflation and the fixed rate of return.

5. A widow lives entirely on income from fixed-rate corporate bonds.
   - **H**
   - **G**
   - **U**
   
   Explain: The purchasing power of the income will be less as inflation continues to deflate the value of the dollar.
6. A retired couple lives entirely on income from a pension the woman receives from her former employer.

H G U

Explain: It depends on whether the pension has a cost-of-living adjustment. If it does not, then the purchasing power of the pension payment will be less as inflation continues.

7. A retired man lives entirely on income from Social Security.

H G U

Explain: It depends on whether the Social Security payments are fully indexed for inflation. If Social Security payments do not increase at the same rate as inflation, then the retired man is hurt by inflation because he cannot purchase the same amount of goods and services.

8. A retired bank official lives entirely on income from stock dividends.

H G U

Explain: It depends on the growth in stock dividends relative to the inflation rate. In general, stock dividends increase with inflation while bond interest rates are fixed; however, the increase does not have to match the inflation rate.

9. The federal government has a $5,000,000,000 debt.

H G U

Explain: The government will repay the debt with money that has less purchasing power.

10. A firm signs a contract to provide maintenance services at a fixed rate for the next five years.

H G U

Explain: Revenue from contract will be worth less.

11. A state government receives revenue mainly from a progressive income tax.

H G U

Explain: It depends on how much tax revenue increases relative to inflation.
12. A local government receives revenue mainly from fixed-rate license fees it charges businesses.

   **H**   **G**   **U**

   Explain: **Revenue will have a smaller purchasing power.**


   **H**   **G**   **U**

   Explain: **Rent payments will be lower in real terms.**

14. A bank has loaned millions of dollars for home mortgages at a fixed rate of interest.

   **H**   **G**   **U**

   Explain: **Loan repayments will have less value or purchasing power.**

15. Parents are putting savings for their child’s college education in a bank savings account.

   **H**   **G**   **U**

   Explain: **It depends on the return on the savings relative to the inflation rate.**

16. What conclusions can you draw about who is helped and who is hurt by unanticipated inflation?

   Individuals who receive fixed incomes are hurt by inflation — for example, lenders and savers. People who make fixed payments gain — for example, borrowers.

17. If you were certain that the inflation rate would be 10 percent a year for the next 10 years, how might your behavior change? Does your answer depend on who you are? Student? Worker?

   If you are a borrower, you would borrow money to buy real assets particularly if you could borrow at interest rates that did not reflect the high (10 percent) inflation rate. If you are a lender, you would adjust interest rates by the anticipated inflation of 10 percent.
Unemployment

Introduction and Description
Unemployment is always a major economic issue. Economic history seems to show that there is a short-run trade-off between inflation and unemployment. Understanding the types of unemployment is essential to analyzing unemployment reduction policies.

Activity 16 has the students identify the unemployment situation and determine whether it represents frictional, cyclical or structural unemployment.

Objectives
1. Define unemployment, employment, labor force and labor force participation rate.
2. Explain the issues in measuring unemployment.
3. Define the types of unemployment.

Time Required
One class period or 45 minutes

Materials
1. Activity 16
2. Visuals 2.5 and 2.6

Procedure
1. Project Visual 2.5. Discuss the important points:
   (A) Unemployment includes people who are actively looking for work. People who have stopped looking are not counted as unemployed.
   (B) The labor force consists of the employed and the unemployed.
   (C) The labor force participation rate is the proportion of the population over age 16 who are looking for work or who are working.

2. One issue associated with the definition of unemployment is discouraged workers: people who were looking for work but gave up because they didn't succeed in finding a job. The unemployment rate underestimates, by the number of discouraged workers, the number of people who would like to work.

3. A second issue is underemployed workers: people who are working part time but would like to work full time, or who hold a job that requires a lower skill level than they possess. These people are considered employed, but they could be more productive in a different job.

4. A third issue is that different groups within the economy experience vastly different rates of unemployment. The groups may be age cohorts, or race or ethnic categories. Knowing the distribution of unemployment by a particular characteristic is important in constructing policies to help the unemployed.

5. Project Visual 2.6. The important point is that there are different types of unemployment. The primary type that macroeconomic policy makers address is cyclical unemployment.

The other terms on the visual are natural rate of unemployment and full employment. The natural rate of unemployment is the level of unemployment when there is no cyclical unemployment; frictional and structural unemployment may exist at the natural rate of unemployment. The “full-employment” level of employment occurs when the economy is at the natural rate of unemployment.

6. Have the students complete Activity 16. Review the answers to Activity 16 with the students.
Types of Unemployment

There are three types of unemployment:

- **Frictional unemployment** includes people who are temporarily between jobs. They may have quit one job to find another, or they could be trying to find the best opportunity after graduating from high school or college.

- **Cyclical unemployment** includes people who are not working because firms do not need their labor due to a lack of demand or a downturn in the business cycle. For example, if people are not buying many goods and services, workers are laid off.

- **Structural unemployment** involves mismatches between job seekers and job openings. Unemployed people who lack skills or do not have sufficient education are structurally unemployed.

At full employment, we have frictional and structural unemployment, but cyclical unemployment would be zero. At full employment, the level of unemployment is called the natural rate of unemployment.

For each of the following situations, put the appropriate letter before the example.

- F if it is an example of frictional unemployment.
- C if it is an example of cyclical unemployment.
- S if it is an example of structural unemployment.

1. A computer programmer is laid off because of a recession.  
   - F

2. A literary editor leaves her job in New York to look for a new job in San Francisco.  
   - F

3. An unemployed college graduate is looking for his first job.  
   - F

4. Advances in technology make the assembly-line worker’s job obsolete.  
   - S

5. Slumping sales lead to the cashier being laid off.  
   - C

6. An individual refuses to work for minimum wage.  
   - F

7. A high school graduate lacks the skills necessary for a particular job.  
   - S

8. Workers are laid off when the local manufacturing plant closes because the product made there isn’t selling.  
   - C

9. A skilled glass blower becomes unemployed when a new machine does her job faster.  
   - S
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2. A literary editor leaves her job in New York to look for a new job in San Francisco. **F**
3. An unemployed college graduate is looking for his first job. **S**
4. Advances in technology make the assembly-line worker’s job obsolete. **C**
5. Slumping sales lead to the cashier being laid off. **C**
6. An individual refuses to work for minimum wage. **F**
7. A high school graduate lacks the skills necessary for a particular job. **S**
8. Workers are laid off when the local manufacturing plant closes because the product made there isn’t selling. **C**
9. A skilled glass blower becomes unemployed when a new machine does her job faster. **S**
Introduction and Description
The study and control of business cycles are the heart of macroeconomics. The discipline of macroeconomics started as business cycle theory. The business cycle is a problem because of the by-products of output fluctuations: unemployment and inflation. Fluctuations in output and employment created major economic problems during the Great Depression and after World War II. Fluctuations in the economy before World War II led to the Employment Act of 1946; and the business cycles in the post-war period led to discussions of the trade-offs between the goals of economic growth, price stability and unemployment, and to passage of the Humphrey-Hawkins Act.

Objectives
1. Define and describe the phases of the business cycle.
2. Define recession.
3. Recognize the trade-offs between goals.

Time Required
Two class periods or 90 minutes

Materials
1. Activities 17 and 18
2. Visual 2.7

Procedure
1. Start by asking the students, “What causes output to rise and fall?” and “What causes unemployment to rise and fall?”
2. Explain that the business cycle describes economic fluctuations: the rising and falling of output in relation to potential output. Potential output is the level of output that the economy can sustain given the capital stock, technology and full employment.
3. Use Visual 2.7 to discuss the phases of the business cycle. Recession is defined as two consecutive quarters (six months) of negative growth in real GDP. The point at which output starts to decline is called the peak of the cycle, or the beginning of the recession. The point at which output starts to increase is called the trough, or the end of the recession. As the economy moves forward, the period between the trough and the next peak is called the recovery period or expansion.
4. Business cycles are defined in terms of output; however, other variables follow the movement of output. Investment and consumption both rise and fall with movements in real GDP. Inflation typically declines during recessions and increases as the economy approaches the peak. The unemployment rate rises sharply in recessions. Interesting phenomena occur with the unemployment rate over a business cycle. Initially, the unemployment rate rises. If the recession lasts a long time, the unemployment rate remains at a high level or might actually decline as discouraged workers leave the ranks of the unemployed. As the recovery begins, the unemployment rate may remain very steady at a high level. As the economy recovers and people find jobs, other people enter the labor market looking for work and thus the unemployment rate remains steady.
5. Emphasize these points about business cycles:
   - There is no consistent length of time for each phase.
   - Business cycles are unpredictable. After the fact, economists can identify some of the causes of business cycles but are notoriously poor at predicting the actual downturn.
   - Some variables are countercyclical: move in the opposite direction from real GDP. Some variables are procyclical: move in the same direction as real GDP.
6. Have the students complete Activity 17 and review the answers with the students.
7. Have the students complete Activity 18, and review the answers with the students.
The Business Cycle

The curved line on Figure 17.1 shows a sample business cycle for an economy. The straight line represents the long-run trend of real GDP.

The business cycle can conveniently be divided into four phases:

1. **Expansionary or recovery phase.** Real output in the economy is increasing and the unemployment rate is declining. As the economic expansion continues, inflation may begin to accelerate.

2. **Peak.** Real output, GDP, is at its highest point of the business cycle.

3. **Contractionary or recession phase.** Real output in the economy is decreasing, and the unemployment rate is rising. As the contraction continues, inflationary pressures subside. If the recession continues long enough, prices may actually start to fall, a situation known as deflation.

4. **Trough.** The lowest point of real GDP reached during the business cycle is known as the trough. If the trough is particularly deep, it may be called a depression. A depression is an economic situation where the level of output falls to especially low levels and unemployment climbs to very high levels relative to the historical average. There is no precise decline in ou-
put at which a serious recession becomes a depression. However, most business cycles do not end in a depression. The most recent depression the United States experienced was during the 1930s.

1. Figure 17.2 contains information for the U.S. economy from 1980 through 2001. For each quarter, first identify whether the economy was in an expansionary (E) or a contractionary (C) phase. Go back and pick out the quarters that correspond with a business cycle peak, and mark them with a P. Then find the quarters that correspond with a trough, and mark them with a T. Some of the answers have been provided for you.

Using your answers from Question 1, answer the following questions.

2. How many business cycles did the U.S. economy have between 1980 and 2001? 2

3. In how many quarters was output expanding? 76

4. In how many quarters was output contracting? 10


6. Which contraction looks worst to you? Explain. 1980. Both unemployment and inflation rates were very high.

7. During quarters in which real GDP fell, what happened to the unemployment rate compared with the previous quarter? Why? The unemployment rate was higher. As real GDP fell, the unemployment rate increased; because of rising inventories, workers were laid off.

8. Look at the unemployment rate in quarters corresponding to a business cycle peak. Why do you think there was still some unemployment in these quarters? There is unemployment even at full employment because of frictional and structural unemployment.

9. Look at the unemployment rate in quarters corresponding to recoveries. Why do you think the unemployment rate remained high? Unemployment remains high for two reasons: (1) frictional and structural employment and (2) with an expanding economy, more people move into the labor force looking for work.

10. Based on the years 1980 to 2001, how does the rate of inflation correspond with the business cycle? The inflation rate decreases during contractions but fluctuates during recoveries.
### Figure 17.2

#### The U.S. Economy from 1980

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<th>Year</th>
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<th>% Change From Previous Quarter</th>
<th>Civilian Unemployment Rate</th>
<th>Inflation Rate (CPI)</th>
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<td>9,334.5</td>
<td>0.33</td>
<td>4.19</td>
<td>0.96</td>
<td>E</td>
</tr>
<tr>
<td>2001q2</td>
<td>9,341.7</td>
<td>0.08</td>
<td>4.47</td>
<td>1.04</td>
<td>E</td>
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</table>
Test Your Understanding of Macroeconomic Indicators

Answer the questions and briefly explain your answers.

1. The unemployment rate and employment both go up. Ellen says that it is not possible for both to rise at the same time. Is Ellen correct or incorrect? Why? Ellen is incorrect. If more people enter the labor force and most of them do not find jobs, both employment and unemployment rates will rise.

2. True, false or uncertain, and explain why? “Gross domestic product measures the amount of wealth in the economy.” False. GDP measures a stream of production or income in a particular year or time period. Wealth includes the current value of goods and services produced in past years.

3. True, false or uncertain, and explain why? “A decrease in gross domestic product must reduce a person’s standard of living.” False. GDP measures the production of the nation. Even during recessions, many people’s real incomes rise.

4. True, false or uncertain, and explain why? “If nominal GDP increases by 5 percent and the price level increases by 7 percent, real GDP has decreased.” True. Real GDP would fall by about 2 percent because the inflation rate is higher than the rate of growth in nominal GDP.

5. True, false or uncertain, and explain why? “In preparing an index of prices, it is important that all commodities entering the index be given equal weight.” False. Commodities should enter the index with the weight that represents the proportion the item represents in people’s actual pattern of consumption or use. Different groups have different consumption patterns. An index cannot capture everyone’s cost of living.

6. True, false or uncertain, and explain why? “Frictional and structural unemployment are two words for the same thing.” False. Structural unemployment occurs because people do not have the skills necessary for the jobs available. Frictional unemployment occurs when people are between jobs. They will find employment, but it will take time to match them with job vacancies.
7. Why does unanticipated inflation help borrowers and hurt lenders? **Borrowers pay back a fixed number of dollars, but these dollars are worth less. This means that the purchasing power of the dollars that lenders receive is lower than the purchasing power of the dollars in the original loan.** If the loan has a variable interest rate and inflation causes nominal interest rates to rise, the lender will not be hurt as badly because the lender can raise the interest rate on the loan.

8. True, false or uncertain, and explain why? “Inflation always increases when unemployment decreases.” **False. Although this is sometimes the case, look at the data in Activity 17 to illustrate that this is not always true. During 1983q2 to 1987q1, the unemployment rate was decreasing and inflation was highly variable.**

9. True, false or uncertain, and explain why? “If the economy is at full employment, the unemployment rate is zero.” **False. At full employment, we have frictional and structural unemployment. Frictional unemployment occurs when people are between jobs; structural unemployment occurs when people do not have the skills for the jobs that are available.**

10. True, false, or uncertain, and explain why. “Seasonal unemployment is a continual worry because some people are out of work on a regular basis.” **Uncertain. For the seasonally unemployed person it can be a worry. However, stimulating the economy may not change the situation. Seasonal workers are people who work only during particular seasons of the year such as Christmas time or harvest time.**
Answers to Sample Multiple-Choice Questions

6. A  13. C  20. A
7. E  14. A
Answers to Sample Short Free-Response Questions

1. Answer the following questions about GDP.

   (A) Explain whether this statement is true, false or uncertain: “To ignore the production of intermediate goods when measuring the total product of a country means ignoring the work, the efforts and the incomes of millions of citizens. This is a mistake and can be rectified only by including intermediate goods production in GDP figures.” 

   **False.** The value of intermediate goods is captured in the value of the final good. Thus, the effort of intermediate goods producers is not ignored in the GDP numbers.

   (B) Give two reasons for using real GDP per capita as a measure of the standard of living for a nation. 

   **Real GDP per capita** is a good measure because it gives us some idea of the income people would have if we divided production equally among all people. It is also a consistent measure over a long period of time, which allows us to observe changes in the average standard of living.

   (C) Give two reasons why real GDP per capita is not a good measure of the standard of living for a nation. 

   **Real GDP per capita** does not measure all of the nonmarket production that goes on in households. It also does not recognize the fact that income is not equally distributed among the nation’s citizens.

2. Explain the statement “A man diminishes GDP by marrying his cook.”

   It demonstrates how omitting nonmarket activities affects real GDP. The man pays his cook for her services, and her salary enters into GDP. However, once she becomes his wife and continues to cook for him, her services are no longer included in GDP because they are nonmarket activities.
3. You read the headline: “Real GDP Rises 3% This Year; Further Increases Likely Next Year, Economists Say.”

(A) What does this headline mean? Be specific.

The output of the nation, accounting for the change in the price level, has increased and is expected to continue to increase.

(B) Why do people care about the growth in real GDP?

It could mean more job opportunities or fewer job losses. Continued increases in real GDP could lead to inflation.

(C) What is the difference between real GDP and nominal GDP?

The real indicator accounts for price-level changes, which means it gives a clearer picture of actual changes in output. Nominal GDP is simply price times quantity. Nominal GDP increases could be caused by price increases, output increases or a combination of the two.

4. In a certain year, the annual unemployment rate was 6.1 percent. Define the term unemployment rate, and explain its meaning. What other information do you want to know before recommending a policy to reduce unemployment? Explain why you would want to know this information.

The unemployment rate is the percentage of the labor force that is looking for work. Before devising a policy, you would want to know what part of the unemployment is frictional, structural or cyclical. You would want to know this information because only cyclical unemployment is directly affected by changes in the policy. You might also want to know if the labor force participation rate has changed — that is, if more people are entering the labor force. Actual employment could be increasing while the unemployment rate is rising. Additionally, you might want to know whether particular groups are experiencing higher unemployment rates. If specific groups are, you might want to propose programs to help reduce unemployment in these groups: retraining programs for coal miners, for example.
5. You read the following headline: “Inflation Rate at 1.1% — Lowest Rate in 2 Decades.”

(A) What is meant by inflation? **Inflation is the rate of increase in the average price level.**

(B) How did the statisticians arrive at 1.1 percent? What measure did they probably use? They probably used the consumer price index. **Inflation = \( \frac{P(t) - P(t - 1)}{P(t - 1)} \)**

(C) What does this headline imply about inflation during the previous 20 years? **The inflation rate has been higher than 1.1% during the last 20 years.**

6. The following table shows a price index for a five-year period.

(A) Using 2000 as the base year, calculate the price index for each year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price Index (1999 = 100)</th>
<th>Price Index (2000 = 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>88</td>
<td>73.3 (88 / 120)</td>
</tr>
<tr>
<td>1999</td>
<td>100</td>
<td>83.3 (5 / 6)</td>
</tr>
<tr>
<td>2000</td>
<td>120</td>
<td>100 (100)</td>
</tr>
<tr>
<td>2001</td>
<td>132</td>
<td>110 (132 / 120)</td>
</tr>
<tr>
<td>2002</td>
<td>140</td>
<td>116.7 (140 / 120)</td>
</tr>
</tbody>
</table>

(B) If 2001 nominal GDP were $400 billion and 2002 nominal GDP were $420 billion, what was the growth rate for the economy from 2001 to 2002? **The real GDP in 2001 is $363.6 billion and real GDP in 2002 is $360 billion. Thus, the growth rate is -1.01 percent. The economy actually experienced negative growth even though nominal GDP increased. Answers may differ because of rounding. The major point is that because of inflation, real GDP declined slightly even though nominal GDP increased.**

7. Assume the inflation rate is 2 percent. How is this rate measured, and what does this rate of inflation mean to the average citizen? **This is probably a CPI (consumer price index) measurement. The CPI is constructed by measuring the prices of goods and services that consumers typically buy. The index is based on a market basket of 400 goods and services. To average consumers, the 2 percent rate means that generally what they purchased before for $100 will now cost $102.**
Answers to Sample Long Free-Response Questions

1. Define unanticipated inflation. How does unanticipated inflation affect lenders, borrowers, homeowners and the federal government? Inflation reduces the purchasing power of money received in the future. When inflation is unexpected or unanticipated, people have not made certain choices that would protect them against inflation of the specific rate. In general, people who borrow money will gain at the expense of lenders. The premium (the interest rate) charged for a loan may not be enough to cover the loss in purchasing power at the time of repayment. Thus, buyers are paying back with dollars that have a reduced purchasing power. Homeowners are usually borrowers, so they would gain if they had a fixed-rate mortgage. The federal government would gain until it reissues its bonds. The federal government would gain from its bond sales because it receives money that has greater purchasing power than the money it pays bondholders when the bonds mature.

2. You read the following information about the economy:

- Real GDP up 3 percent from a year ago
- Unemployment rate of 4.6 percent
- Consumer price index up 6 percent from a year ago
- Index of leading indicators up for the last six months
- Prime interest rate of 10 percent, up from 7 percent a year ago

(A) Explain what each of these economic indicators measures and the significance of the current data for the economy. 
Output of goods and services in this economy has increased by 3 percent in real terms, or accounting for price changes. The percentage of the labor force that is currently looking for work is 4.6. The general level of prices of items typically purchased by consumers has increased 6 percent. This means that what was purchased last year for $100 now costs $106. The index of leading indicators is constructed of the economic variables that generally lead the business cycle. In other words, it is a composite of variables that appear to predict what will happen to the economy. Here the leading economic indicators have increased, indicating that the economy is in a recovery or expansionary phase of the business cycle. The interest rate for the best customers has increased. This is particularly bad news for the business sector of the economy, which does much of its capital improvement with borrowed money. The increase in interest rates means that any investment expenditures are going to cost more; thus, firms will spend less on capital goods.

(B) These indicators should paint a picture of the entire economy. Describe this picture. The data indicate that this economy is in the expansionary phase of a business cycle. The unemployment rate is relatively low; output is growing in real terms but inflation is rather high. The increase in the prime rate is historically high and may mean that the economy is about to turn down.
Macroeconomic Questions

Why does output fluctuate?

What determines economic growth?

Why do we have unemployment, and why is unemployment a problem?

Why do we have inflation, and why is inflation a problem?

Which government policy affects output, growth, unemployment and inflation?

How do changes in the amount of money in the economy affect output, growth, unemployment and inflation?

How do domestic economic activities affect other countries and our trade?
Real GDP 1952-2001
(in billions of 1996 dollars)
Circular Flow

THE PRODUCT MARKET

HOUSING

THE FACTOR MARKET

Money Payments (sales dollars)

Goods & Services

Taxes

Taxes

Productive Resources

Money-Income Payments (wages, rents, interest, profit)

HOUSEHOLDS

GOVERNMENT

BUSINESS FIRMS

GOODS & SERVICES

GOODS & SERVICES

GOODS & SERVICES
Macroeconomic Goals

Full Employment
Price Stability
Economic Growth
Definitions of Employed, Unemployed and Unemployment Rate

Employed = everyone currently working, including part-time workers

Unemployed = people looking for work or temporarily laid off from work

Unemployment rate = \( \frac{\text{unemployed}}{\text{labor force}} \)

Labor force = employed + unemployed

Labor force participation rate = \( \frac{\text{labor force}}{\text{population aged 16 and older}} \)
Types of Unemployment

- Frictional Unemployment
- Structural Unemployment
- Cyclical Unemployment

Other Employment Concepts

- Natural Rate of Unemployment
- Full Employment
Phases of the Business Cycle

- Expansionary/Recovery
- Peak
- Contractionary/Recession
- Trough
- Expansionary/Recovery

Long-run trend of real GDP